Title: Utilization of coconut milk processing waste as a low-cost mercury sorbent

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Abstract: Desiccated coconut waste sorbent (DCWS), a byproduct of coconut milk processing, was studied as a sorbent for Hg(II) sorption. Energy dispersive X-ray analysis indicated that the DCWS mainly contained C, N, and O, while the Fourier transform infrared measurements confirmed the existence of hydroxyl, carboxyl, and amine groups on the DCWS surface. The point of zero charge (pHpzc) and cation-exchange capacity (CEC) values were 6.05 and 2.02 meq/100g, respectively. The batch equilibrium data were fitted well by the Langmuir isotherm model with a maximum sorption capacity, qmax of 500 mg/g, while the kinetic sorption data were found to follow a pseudo-second-order kinetic model. A column sorption study showed that the sorption capacity increased and the breakthrough time decreased with the increase in the initial Hg(II) concentrations. The regeneration studies revealed that the DCWS could be regenerated and reused.